WASHINGTON DEPARTMENT OF ECOLOGY

ENVIRONMENTAL ASSESSMENT PROGRAM

FRESHWATER MONITORING UNIT

STREAM DISCHARGE TECHNICAL NOTES

STATION ID: 32A120

STATION NAME: Walla Walla River at Pepper Bridge

WATER YEAR: 2011

AUTHOR: Mitch Wallace

Introduction

Watershed Description

The Walla Walla River is a tributary of the Columbia River, joining the Columbia just above Wallula Gap in southeastern Washington. The headwaters of the Walla Walla River lie in the Blue Mountains of northeastern Oregon. Ninety-five percent of the watershed above this station lies within the State of Oregon. The Walla Walla River supports populations of spring Chinook salmon, summer steelhead, and bull trout. Land use in the watershed is mostly dryland and irrigated agriculture.

Gage Location

The station is located on the left bank, downstream of the Pepper Bridge Road crossing, near the Oregon/Washington state line. It is located at river mile 39.6.

Table 1.

Drainage Area (square miles)	38.7
Latitude (degrees, minutes, seconds)	46° 00' 09" N
Longitude (degrees, minutes, seconds)	118° 22' 56" W

Discharge

Table 2. Discharge Statistics.

Mean Annual Discharge (cfs)	252
Median Annual Discharge (cfs)	211
Maximum Daily Mean Discharge (cfs)	1390
Minimum Daily Mean Discharge (cfs)	13
Maximum Instantaneous Discharge (cfs)	2320
Minimum Instantaneous Discharge (cfs)	11
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	611
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	20
Number of Days Discharge is Greater Than Range of Ratings	0
Number of Days Discharge is Less Than Range of Ratings	0

Note: Statistics displayed in Table 2 may not include values in which the predicted discharge exceeds the range of ratings.

Narrative

Eleven discharge measurements were taken, ranging from 12 to 937 cfs.

Error Analysis

Table 3. Error Analysis Summary.

Logger Drift Error (% of discharge)	6
Weighted Rating Error (% of discharge)	10
Total Potential Error (% of discharge)	16

Rating Table(s)

Table 4. Rating Table Summary

Rating Table No.	14	15		
Period of Ratings	6/3/10-1/17/11	1/18/11-9/30/11		
Range of Ratings (cfs)	8.9 to 2350	6.3 to 2350		
No. of Defining Measurements	8	13		
Rating Error (%)	10.7	9.3		

Rating Table No.				
Period of Ratings				
Range of Ratings (cfs)				
No. of Defining Measurements				
Rating Error (%)				

Narrative

A significant rain on snow event in mid January led to channel fill, resulting in a shift to rating #15.

Stage Record

Table 5. Stage Record Summary

Minimum Recorded Stage (feet)	2.14
Maximum Recorded Stage (feet)	8.49
Range of Recorded Stage (feet)	6.35
Number of Un-Reported Days	0
Number of Days Qualified as Estimates	19
Number of Days Qualified as Unreliable Estimates	8

Narrative

The staff gage and slant pipe incurred damage during the high- flow event in mid-January. This led to qualifying certain data as estimates. There was a 14 -day data gap, due to a failed battery. This gap was filled with data from Ecology gage 32A100 (Walla Walla R. at Detour Rd).

Modeled Discharge

Table 6. Model Summary

Model Type (Slope conveyance, other, none)	Slope conveyance
Range of Modeled Stage (feet)	6.5 to8.5
Range of Modeled Discharge (cfs)	1190 to 2580
Valid Period for Model	1/18/11 to 9/30/11
Model Confidence	9.6%

Surveys

Table 7. Survey Type and Date (station, cross section, longitudinal)

Type	Date
X-section, Longitudinal	09/28/2011

Activities Completed

Replaced battery. Removed large root wad that was resting on slant pipe. Re-ran slant pipe.